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TWO UNUSUAL CENTRAL AMERICAN SPIROSTREPTID MILLIPED SPECIES

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In recent months two unusual spirostreptids have been given me for study. One is believed to be the first truly troglobitic milliped in the family and was found two years ago in Yucatan by Stanley Kiem. Beside the fact that it was discovered deep in a cave it exhibits many of the characters associated with troglobitic forms, not only of millipeds but of other arthropods as well; pigmentation is greatly reduced; the body wall is less strongly chitinized than in surface species; the legs and antennae are elongated, and the ocelli are unusually low in number, lacking in pigment and seem poorly developed. That they were somewhat functional, however, probably is indicated in a note by Kiem: "The milliped was almost white and when a flashlight was pointed directly at it, it squirmed and twisted but became calm when the beam was turned away."

Over a half dozen spirostreptids have been taken in Mexican and Central American caves, some being recognized as established surface species and of the others, described as new, five were from various localities in Yucatan but none had characters indicating adaptation to cave life and most were suspected of being casual visitants from aboveground.[1]

In general it is difficult and often impossible to identify or describe satisfactorily female specimens in this family, except in association with males, because they show few distinctive characters, the others integrating with those of one or more related species. In this cave species, however, so many outstanding peculiarities are shown that identity of future specimens should never be in doubt and its description seems

[1] Chamberlin, R. V. Diplopods from Yucatan. Carnegie Inst. Washington, No. 491, pp. 165–182, illus., 1938.

justified, especially as it places the very restricted type locality on record for collectors in the hope that males may be procured and the correctness of generic designation established.

The second unusual milliped to be dealt with was found in the lowlands of Guatemala by Dr. Hugh Popenoe who sent me three females that had a curiously produced last segment, a character previously unknown in the family, suggesting the possibility that they might typify a new genus. Fortunately, a request for additional specimens resulted in a second collection in which males were represented. While examination of the gonopods reveals that the species is a member of the genus *Orthoporus*, the peculiar caudal segment and several other structural characters indicate a rather wide separation in relationship with any other known member of the genus.

Orthoporus kiemi, new species

Type specimen: Female holotype, U. S. National Museum 2778.

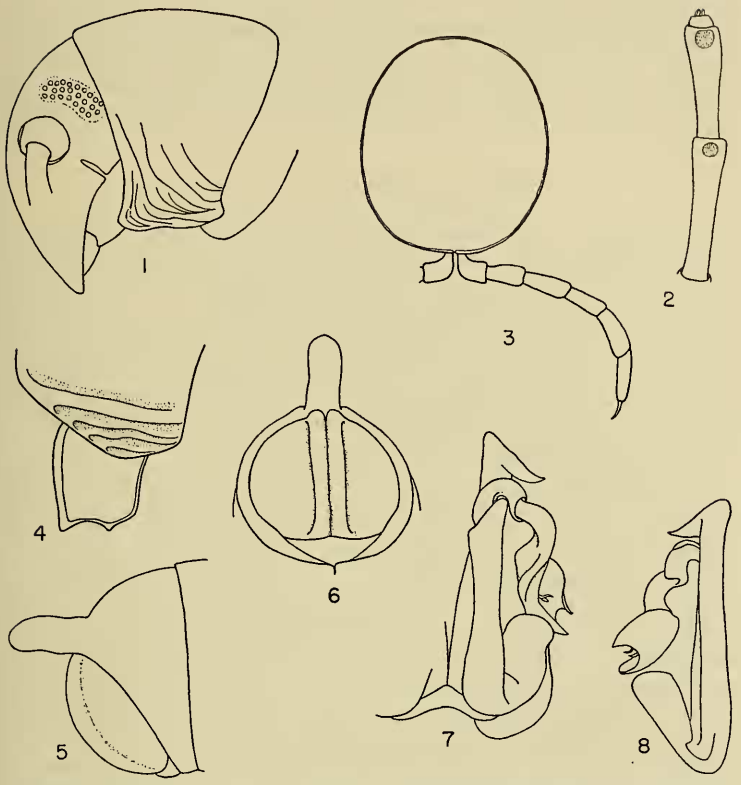
Type locality: Gravid female found in total darkness about 150 feet below surface and about a quarter mile from mouth of cave on Hacienda San Bernardo, five miles from station of same name on railroad between Merida and Maxcanu, Yucatan, 20 March 1959, by Stanley Kiem, Kendall, Florida.

Diagnosis: A smaller species than *O. luchicolens* Chamberlin to which it seems more closely related than to any of the other Yucatan species but distinguished by the light color, reduced number of ocelli, form of segment 1, and location of the pores.

Description: Body with 61 segments, 76 mm long, 4.5 mm wide, and 5 mm high, being laterally compressed throughout and strongly constricted from posterior portion of segment 1 to segments 5 and 6 after which it gradually widens; body wall less chitinized than in surface species; color throughout nearly white, the only exception being an internal dark spot beneath each pore, doubtless the repugnatorial gland.

Head smooth and shining, a median furrow extending forward from segment 1 to a broad shallow depression a little above the upper limits of the antennal sockets. Clypeus with four fovea on one side, a median fovea and two on opposite side. Eyes small, reniform, as shown in Fig. 1, separated by nearly twice their width; composed of small, low, flat, unpigmented ocelli in three rows, ocelli distributed 7-8-9 on one side, 8-8-9 opposite, counting from in front. Antennae 9 mm long, reaching back behind segment 7; joints 2 to 6 slender and of about equal diameter at distal end, joints 2 and 3 subequal in length, longer than subequal joints 4 and 5, joint 6 a little shorter than joint 5, joints 5–7 shown in Fig. 2.

Segment 1 with sides scarcely inflexed, almost vertical, with striae numerous as shown in Fig. 3; anterior corner produced forward, the



FIGS. 1–3. *Orthoporus kiemi.* FIG. 1.—Head and segment 1, lateral view; FIG. 2.—Three terminal joints of antenna from outer side; FIG. 3.—Segment from middle of body with typical long leg, posterior view.

FIGS. 4–8. *Orthoporus paxillicauda.* FIG. 4.—Lower side of segment 1 and mandibulary cardo of holotype; FIG. 5.—Last segment, valve and scale of holotype, lateral view; FIG. 6.—Last segment, valves and scale of paratype female, ventral view; FIG. 7.—Right gonopod of holotype, anterior view; FIG. 8.—Same gonopod, posterior view.

posterior one produced backward somewhat less, intervening margin long, biarcuate. Ensuing segments shining, the prozonites encircled by 6 to 8–9 fine striae, the posterior ones more widely separated and behind the last one the broad median constriction descends abruptly and contains fine, short, longitudinal striae throughout; metazonites noticeably convex with a few tiny faint punctations and with shallow, indefinite, lengthwise channels, more numerous on posterior portion, causing an inconspicuous unevenness of the surface; lateral striae extending to the pores on the anterior segments but receding toward the base of the legs further back. Pores beginning on segment 6, located slightly in front

of middle of metazonites. Last segment considerably exceeded by anal valves, its apex only a little produced; valves smooth, strongly shining, margins thick and strongly elevated; preanal scale over three times as broad as long, its apex more rounded than angular. Legs very long and slender as seen in Fig. 3, a fully extended pair at midbody measuring 13 mm from tip to tip.

Orthoporus paxillicauda, new species

Type specimen: Male holotype, U. S. National Museum 2779.

Type locality: Three females, January 1961, and 3 males, 2 females, 11 February 1961, Zapotillo, Lake Izabal, Guatemala, collected by Hugh Popenoe, University of Florida, Gainesville, Florida.

Diagnosis: This disjunct species may be most closely related to *O. cobanus* Chamberlin, as indicated by the gonopods, but is outwardly distinguished by the smaller, more widely separated eyes, proximity of pores to the transverse constrictions, as well as the extended last segment which has no counterpart elsewhere in the family.

Description: Body cylindrical, ranging from 40 mm long, 2.2 mm wide, 66 segments (female) to 60 mm long, 3 mm wide, 63 segments (holotype); color of metazonites after brief preservation, light fawn brown, the prozonites still lighter; ocelli colorless to light brown.

Head with vertex smooth and shining, a very fine faint median sulcus posteriorly; clypeus with four anterior punctations; eyes small, separated by about four times their transverse length, arranged in four or five longitudinal rows, 3-4-6-5, 1-3-5-6-3, 1-3-5-6-4, counting upward, forming a scalene triangle with anterior side longest, posterior next, and ventral side shortest; antennae short and stout, joint 2 longest, joint 5 next, joint 4 widest; cardo of male mandible shown in Fig. 4.

Segment 1 (above Fig.) strongly shining with almost no tiny punctations such as are more numerous but still sparse on ensuing metazonites to end of body, slightly reducing the gloss of the surface as compared to that of the smooth and brilliantly shining prozonites; lower sides of segment 1 with a broad evenly convex longitudinal ridge and three smaller lower ridges, all set off by rather broad concave channels instead of sharply impressed striae.

Metazonites slightly convex, separated from the flatter prozonites by a fine but strong encircling constriction crossed by small, adjacent ridges, the intervening spaces pit-like and continuous across dorsum; pores very small, beginning on segment 6 where they are about their own diameter behind the constriction but thereafter are removed 2–4 times as far; lower sides of metazonites with striae reaching to line of pores on segment 5 but gradually restricted to lower sides thereafter.

Last segment with dorsum strongly convex, more abundantly punctate than preceding metazonites, the punctate apex abruptly produced into a long cylindrical, apically bluntly rounded, peg-like process greatly exceeding the anal valves as shown in Fig. 5; females with a similar process as seen in Fig. 6 which also shows the preanal scale and the thickly

margined valves, their lateral surface and lower side of margins being punctate like last segment but the margins elsewhere smooth and shining.

Gonopods as shown in Figs. 7 and 8.

Anterior male legs 3–7 with a conic process at disto-ventral end of joint 5; similar processes on joint 4 of legs 6 and 7.